virtual reality

AUGUST 17, 2015
TIME
The Surprising Joy of
Virtual Reality
And why it's about to change the world
By Joel Stein
Palmer Luckey, 22, inventor of the Oculus Rift, is one of the visionaries making virtual reality mainstream
time.com

VIRTUALITY

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DISRUPT BERLIN

Early Bird sale has been extende

This VR cycle is dead

Posted Aug 26, 2017 by Natasha Lomas (@riptar

Intern

Smartphones | Cybersecurity | Innovat

Technology | Wearables

Is VR dead alread could become a '

Virtual reality's boom may have

By David Gilbert

Updated February 20, 2017 15

Gaming News

Is Virtual Reality Gaming Already Dead?

August 31, 2017 · Matthew Byrd

0

MIT Technology Review

vmware REALIZE WHAT'S POSSIBLE.™
IN A CULTURE OF POSSIBILITY
SECURITY UNSHACKLES INNOVATION.
Learn how VMware is transforming security.

Connectivity

Another Price Slash Suggests the Oculus Rift Is Dead in the Water

Facebook hopes that it can finally sell the thing if it undercuts its cheapest rival.

by Jamie Condliffe July 10, 2017

Medium

Andrej Karpathy Follow

Research Scientist at OpenAI. Previously CS PhD student at Stanford. I like to train Deep Neural Nets on large datasets. On a quest to solve intelligence.

Jan 17 · 11 min read

Virtual Reality: still not quite there, again.

The first time I tried out Virtual Reality was a while ago—somewhere in the late 1990's. I was quite young so my memory is a bit hazy, but I remember a research-lab-like room full of hardware, wires, and in the middle a large chair with a big helmet that came down over your head. I was put through some standard 3 minute demo where you look around, things move around you,

we’re talking about the wrong thing

this is much bigger than headsets

something that's better
than looking at media
on a flat screen

@ID_AA_Carmack

immersive media

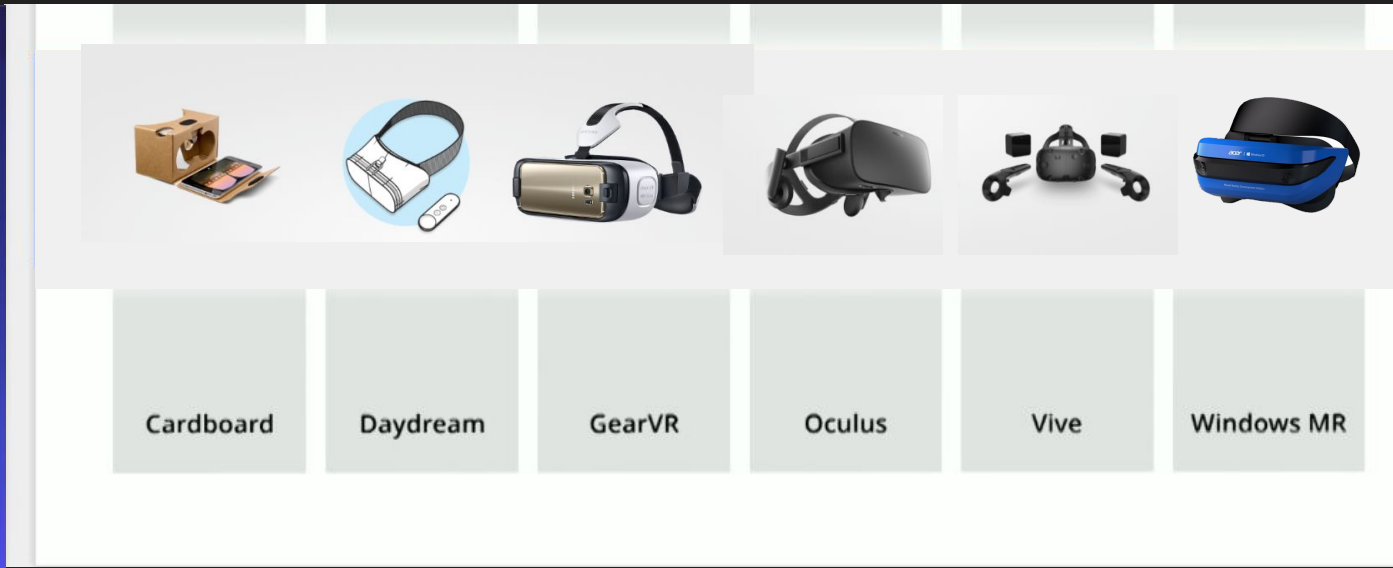
something that's better

than looking at media

on a flat screen

@ID_AA_Carmack

immersive experiences are progressive



@joshcarpenter

immersive media is . . .

***immersive media** is…*

(1) a revolution in human computer interaction

***immersive media** is…*

(1) a revolution in human computer interaction

(2) a massive market thanks to existing devices

***immersive media** is…*

(1) a revolution in human computer interaction

(2) a massive market thanks to existing devices

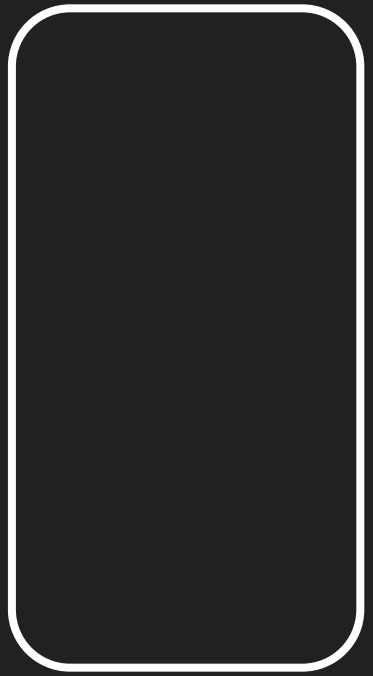
(3) best delivered via the web

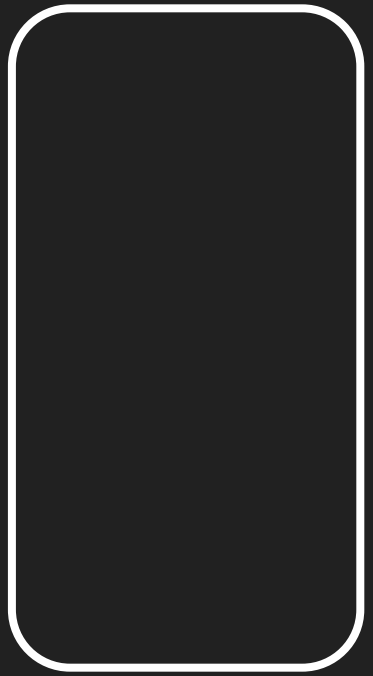
who is this guy?
kieran farr
@kfarr

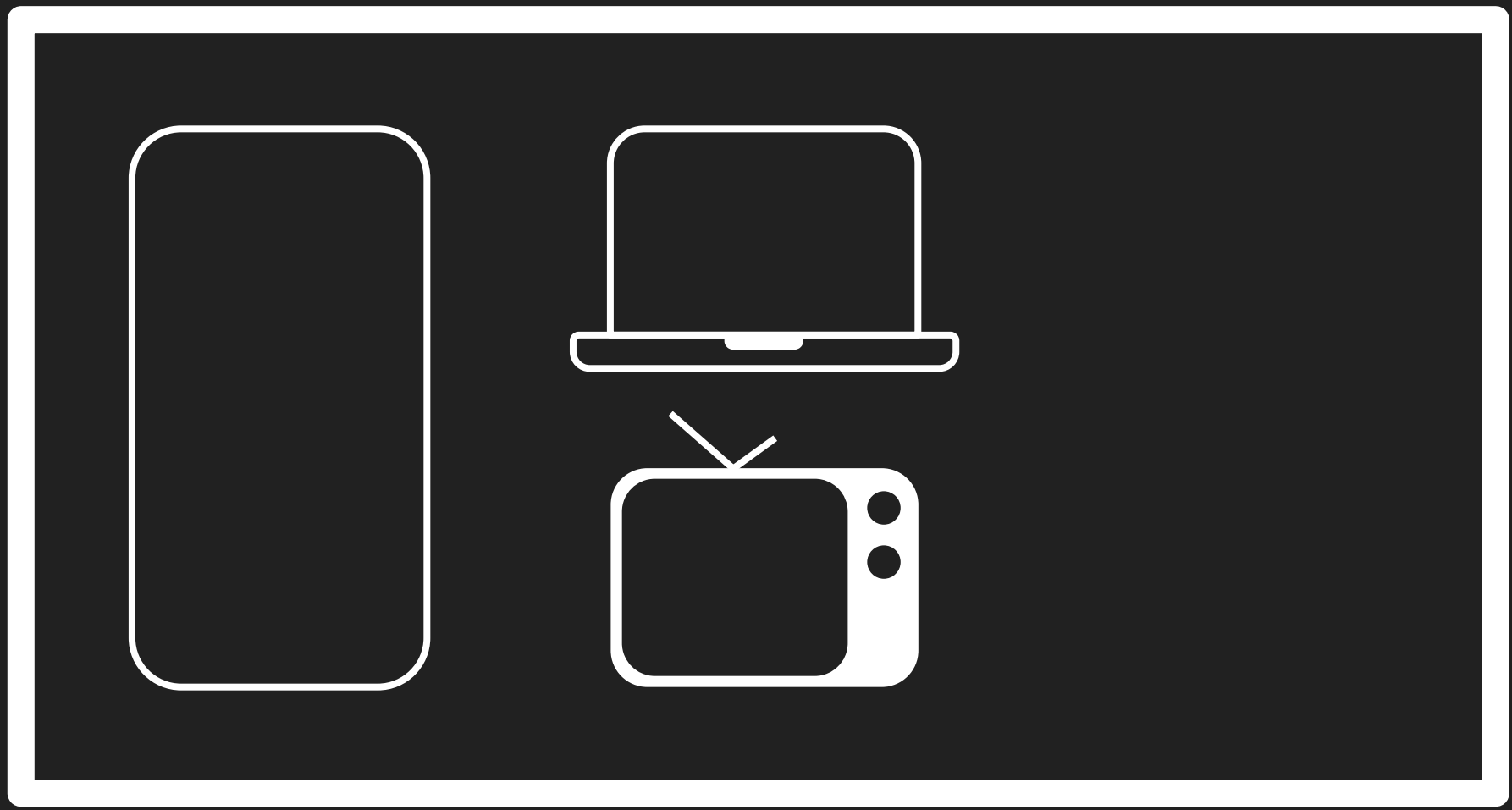
***immersive media** is…*

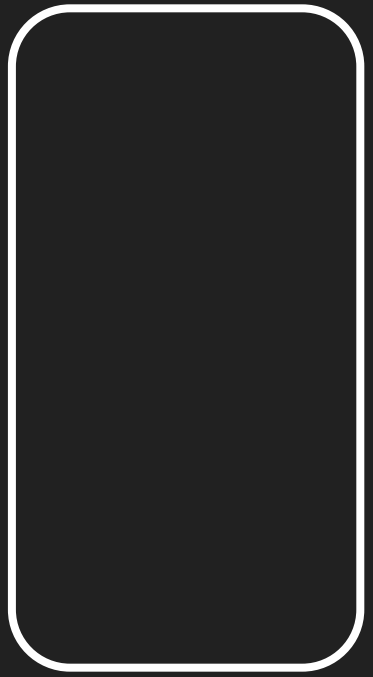
(1) a revolution in human computer interaction

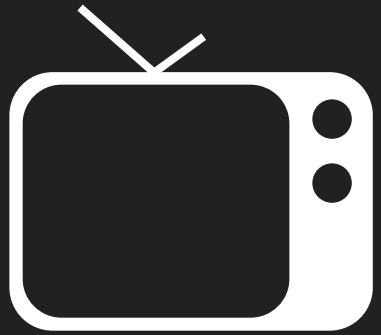
this screen

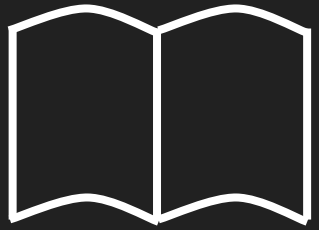


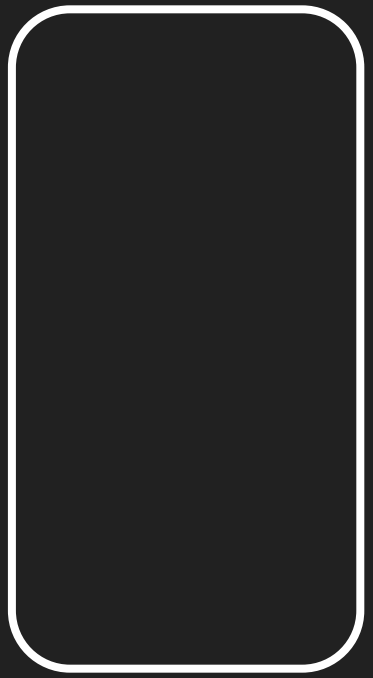


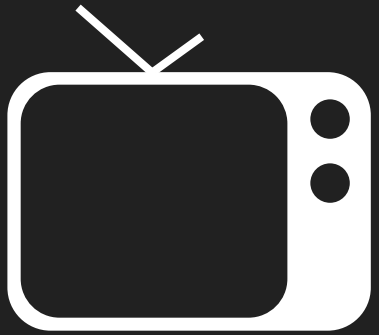






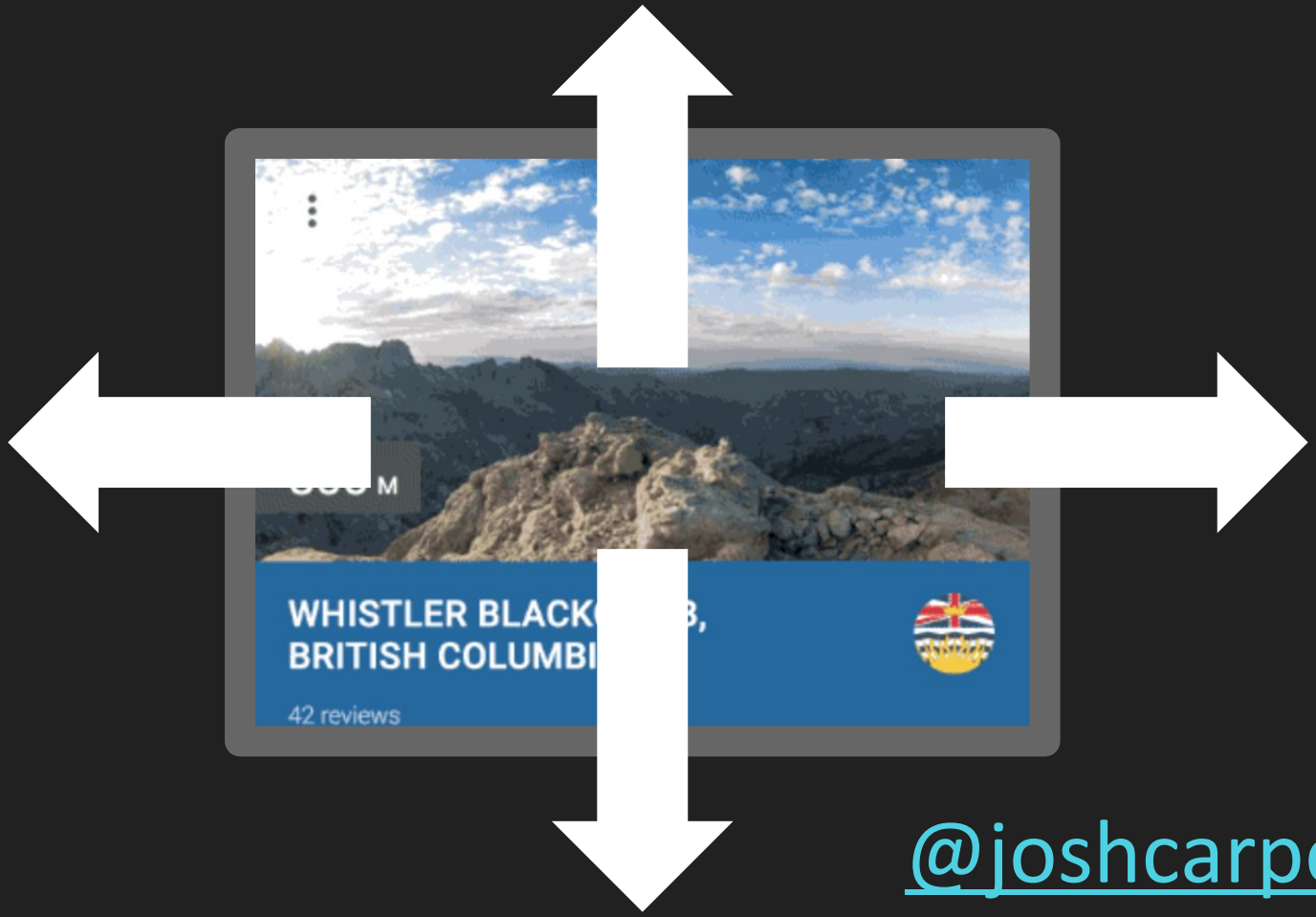




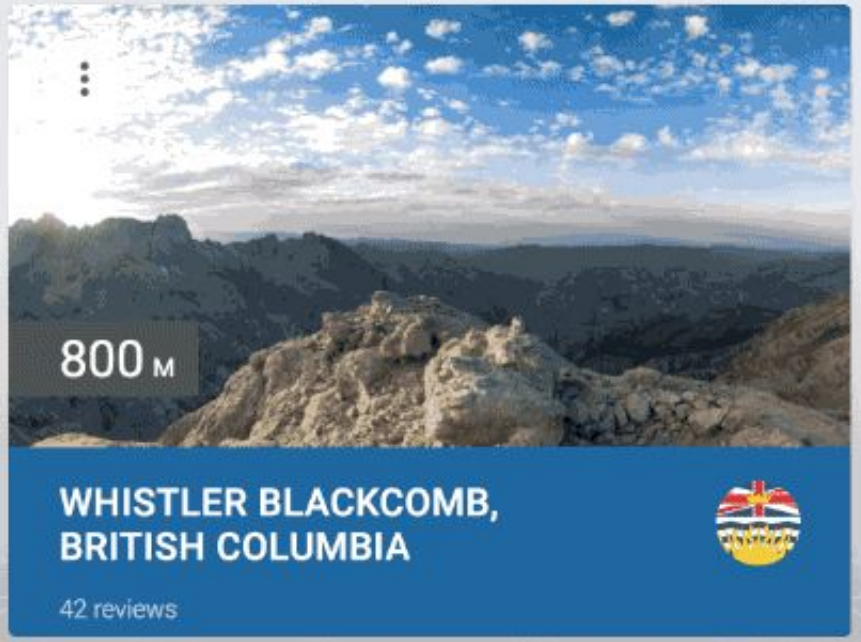


Cueva Manos Cave Painting
Clay Tablets
@flowimmersive

look around the room
where is edge of your view?



@joshcarpenter



@joshcarpenter

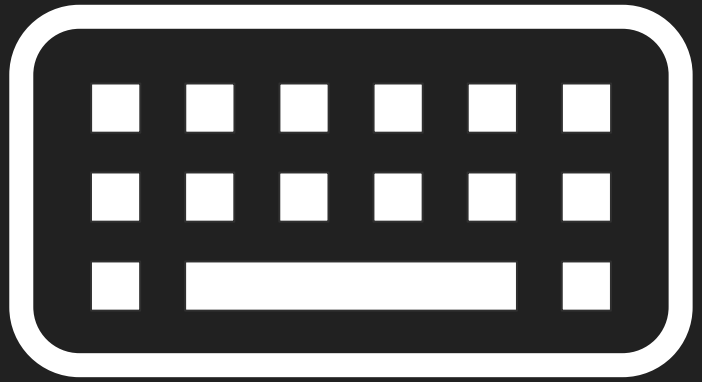
@arturitu

device:

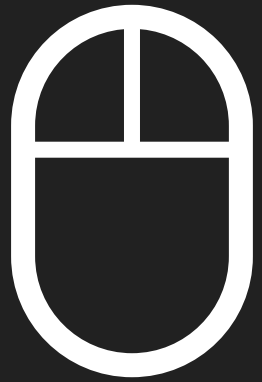
Vive	Windows MR	Cardboard	Daydream	GearVR	Oculus	Vive	Windows MR

input:

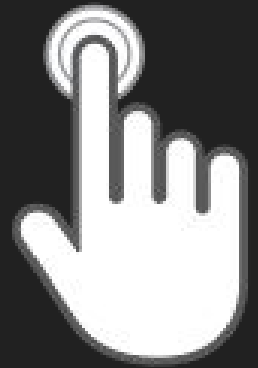
immersiveness



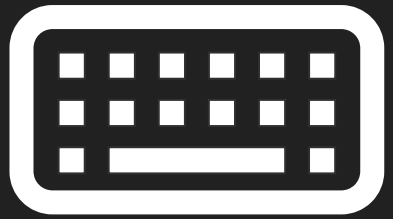
1870s



1970s



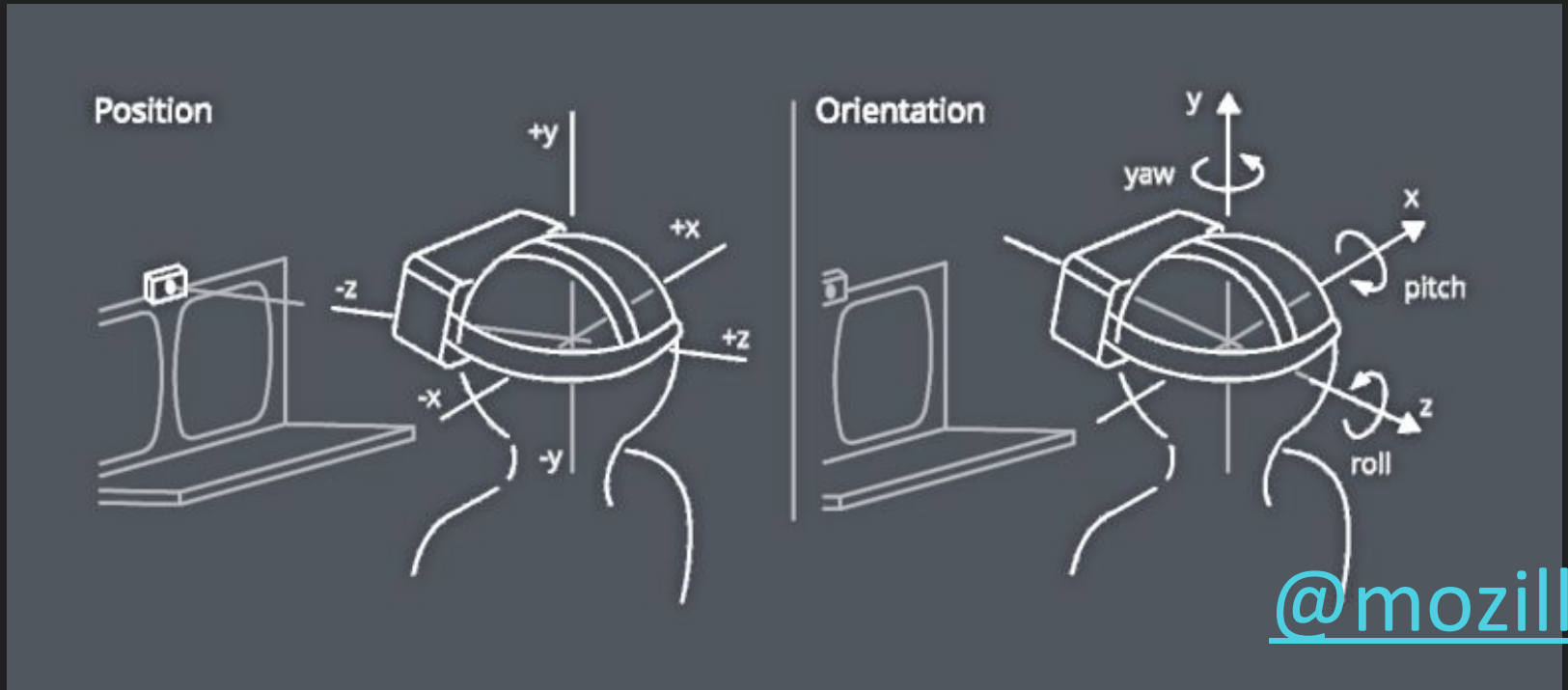
2000s



1870s

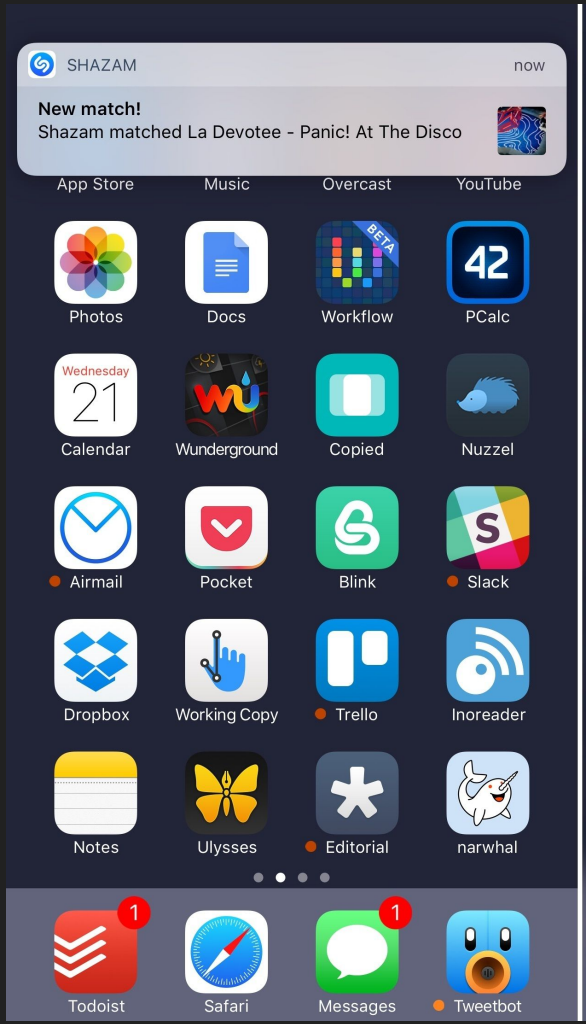
1970s

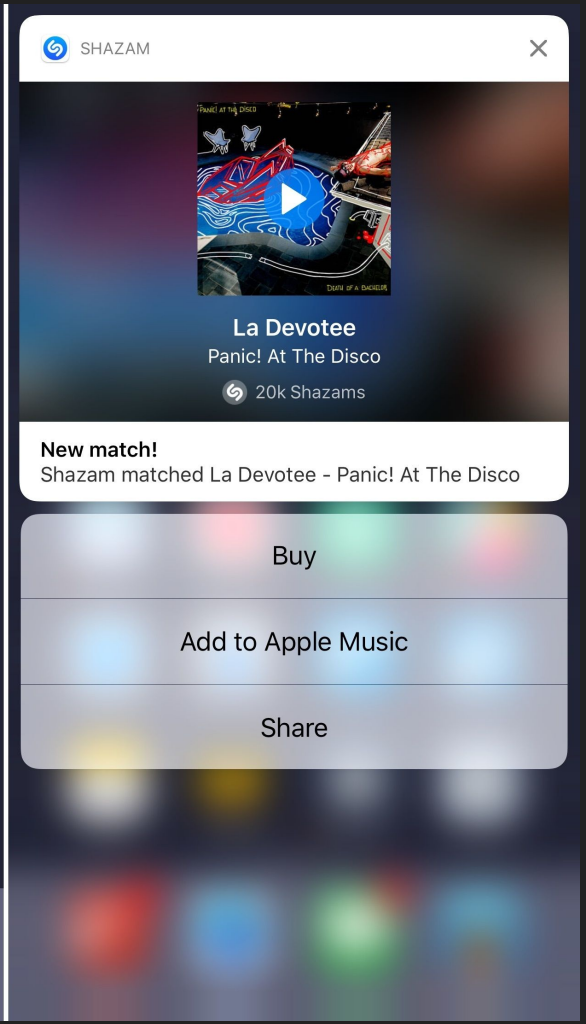
2000s

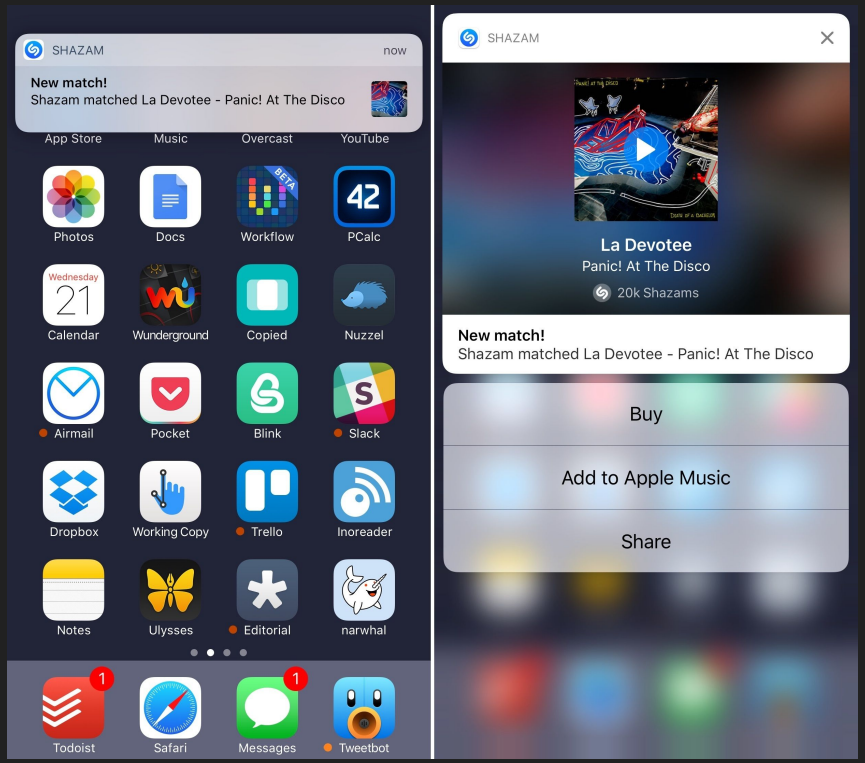


@mozillavr

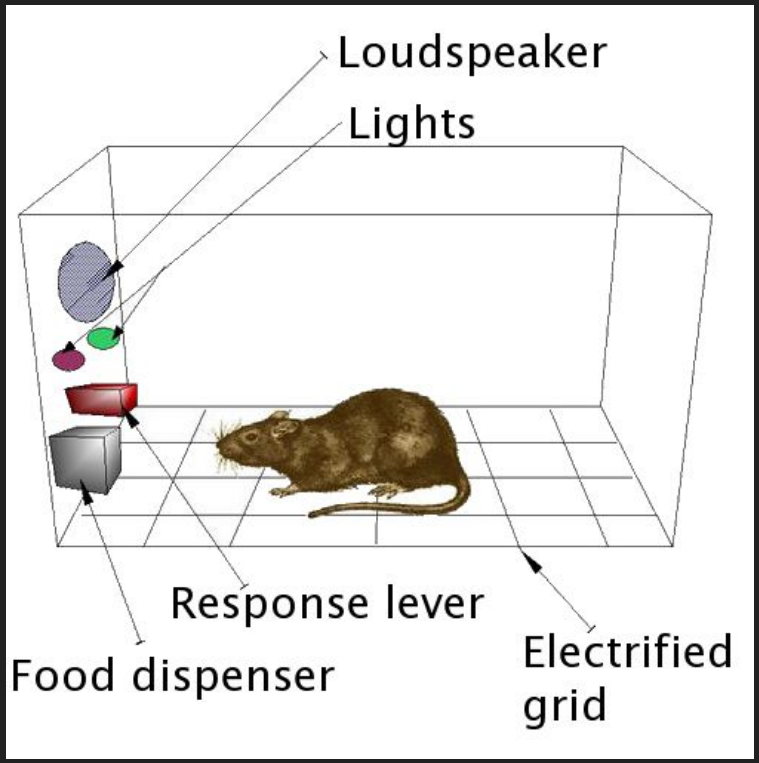
why does this matter?


SHAZAM
now
New match!
Shazam matched La Devotee - Panic! At The Disco
App Store
Music
Overcast
YouTube
Photos
Docs
Workflow
PCalc
Wednesday
21
Calendar
Wunderground
Copied
Nuzzel
Airmail
Pocket
Blink
Slack
Dropbox
Working Copy
Trello
Inoreader
Notes
Ulysses
Editorial
narwhal
Todoist
Safari
Messages
Tweetbot

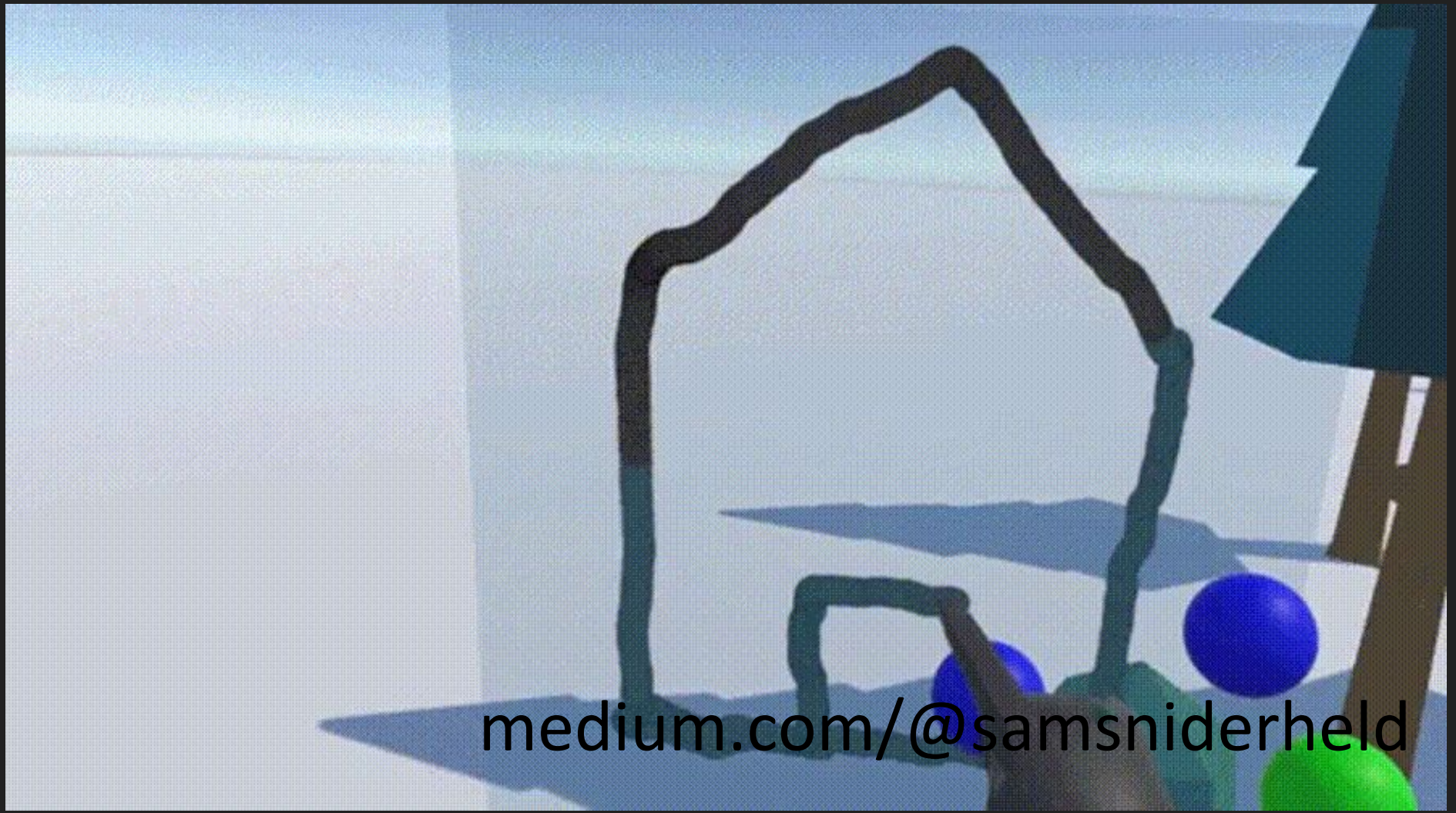

SHAZAM
La Devotee
Panic! At The Disco
20k Shazams
New match!
Shazam matched La Devotee - Panic! At The Disco
Buy
Add to Apple Music
Share


SHAZAM
now
New match!
Shazam matched La Devotee - Panic! At The Disco
App Store
Music
Overcast
YouTube
Photos
Docs
Workflow
PCalc
Calendar
Wunderground
Copied
Nuzzel
Airmail
Pocket
Blink
Slack
Dropbox
Working Copy
Trello
Inoreader
Notes
Ulysses
Editorial
narwhal
Todoist
Safari
Messages
Tweetbot

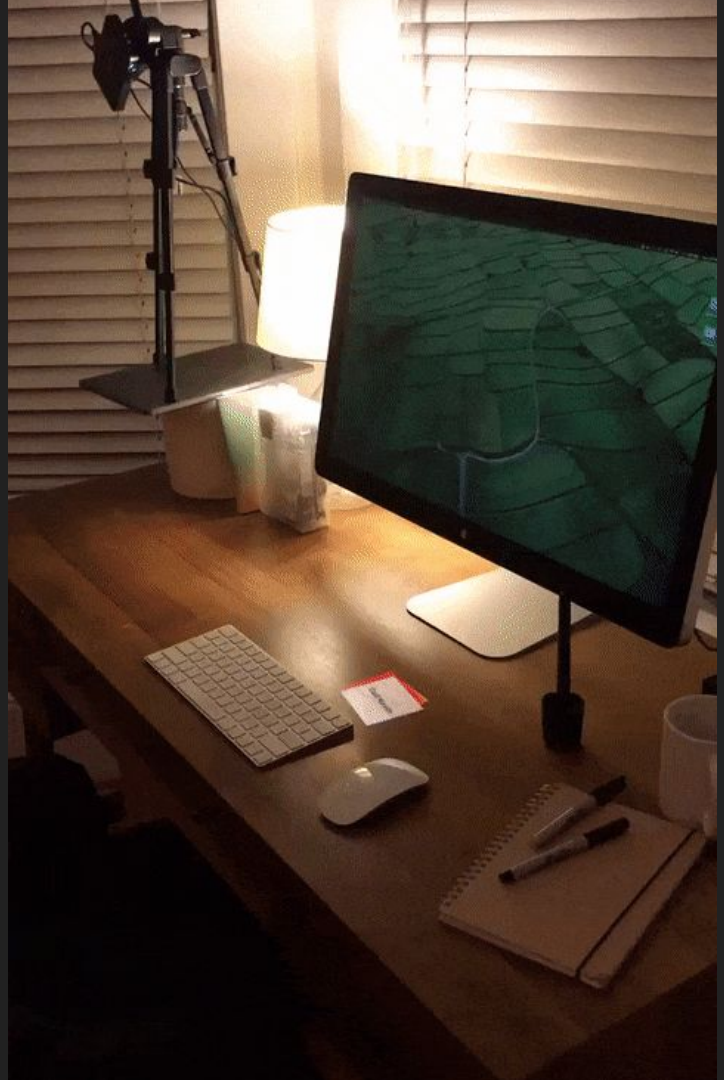
SHAZAM
La Devotee
Panic! At The Disco
20k Shazams
New match!
Shazam matched La Devotee - Panic! At The Disco
Buy
Add to Apple Music
Share


Loudspeaker
Lights
Response lever
Food dispenser
Electrified grid

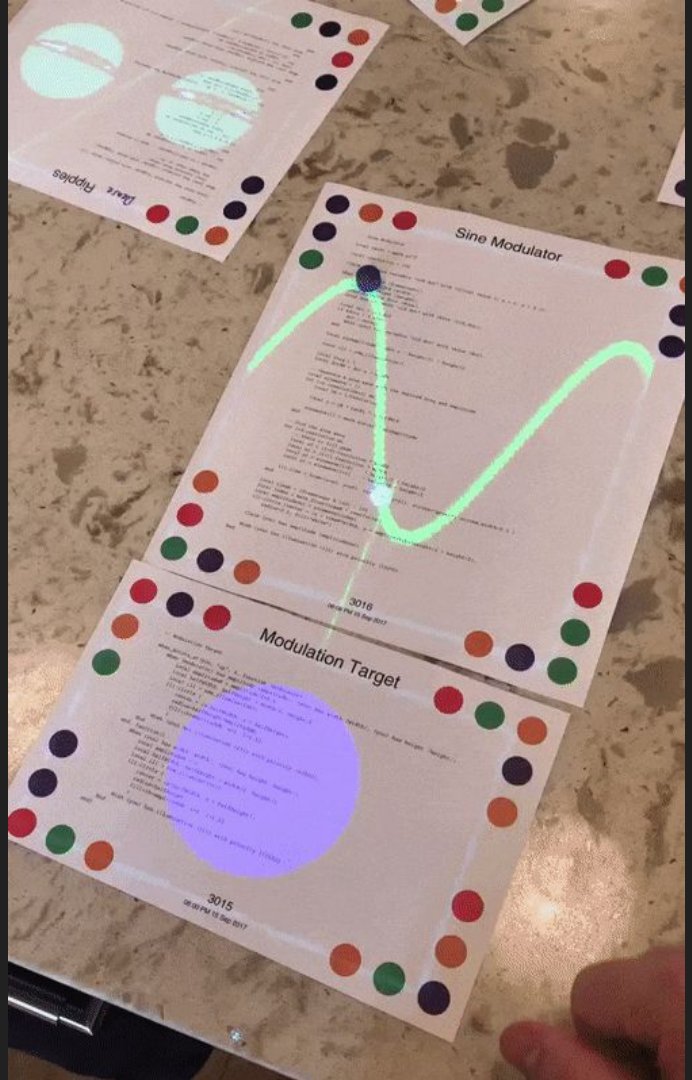
4:37
Hiro
learncalligraphy.today


medium.com/@samsniderheld

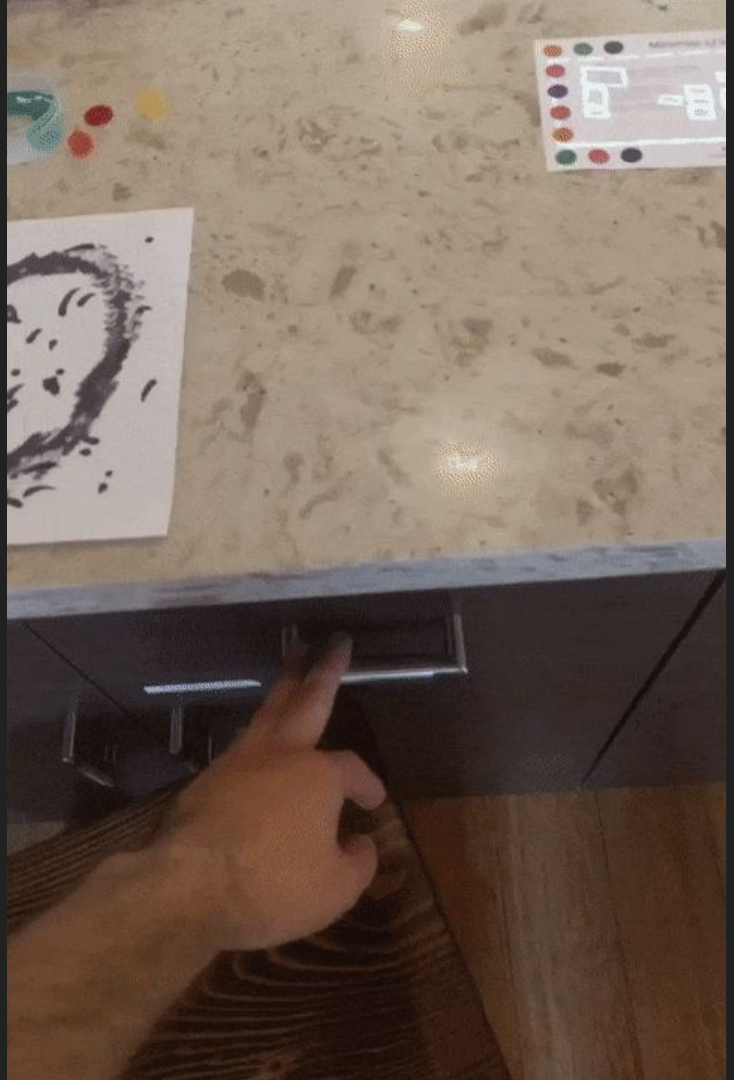
@JKSBMS



@ryhanhassan



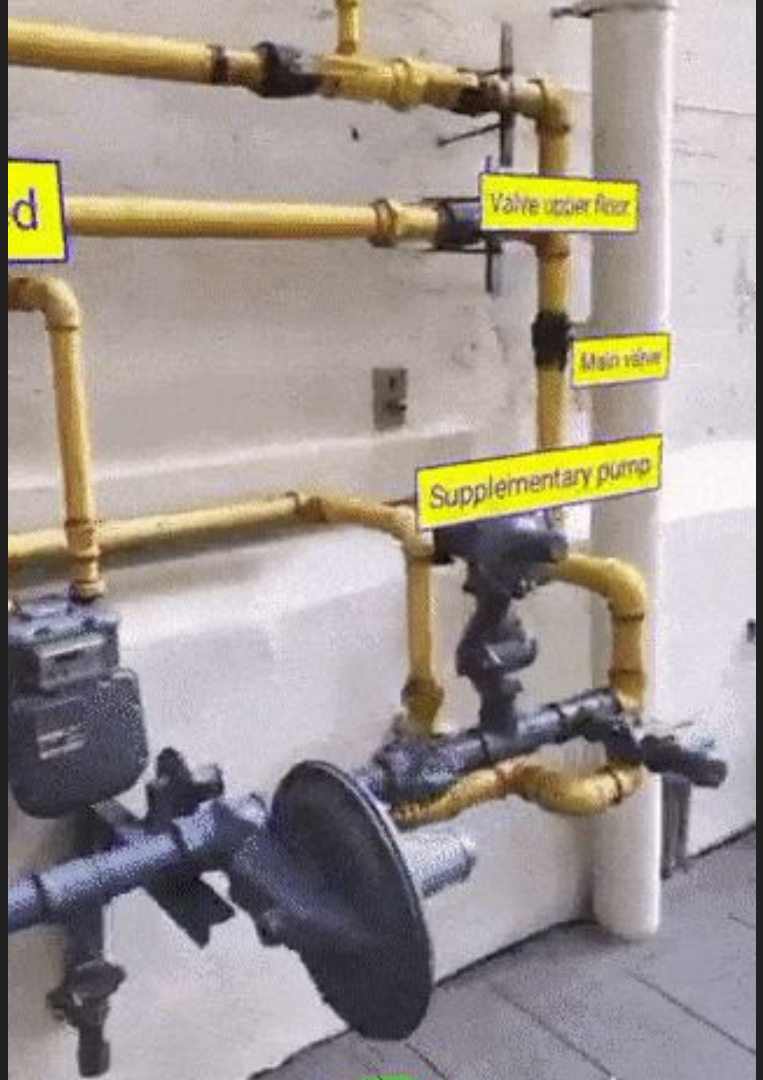
@dynamicland1



@dynamicland1

@googlevr

@googlevr



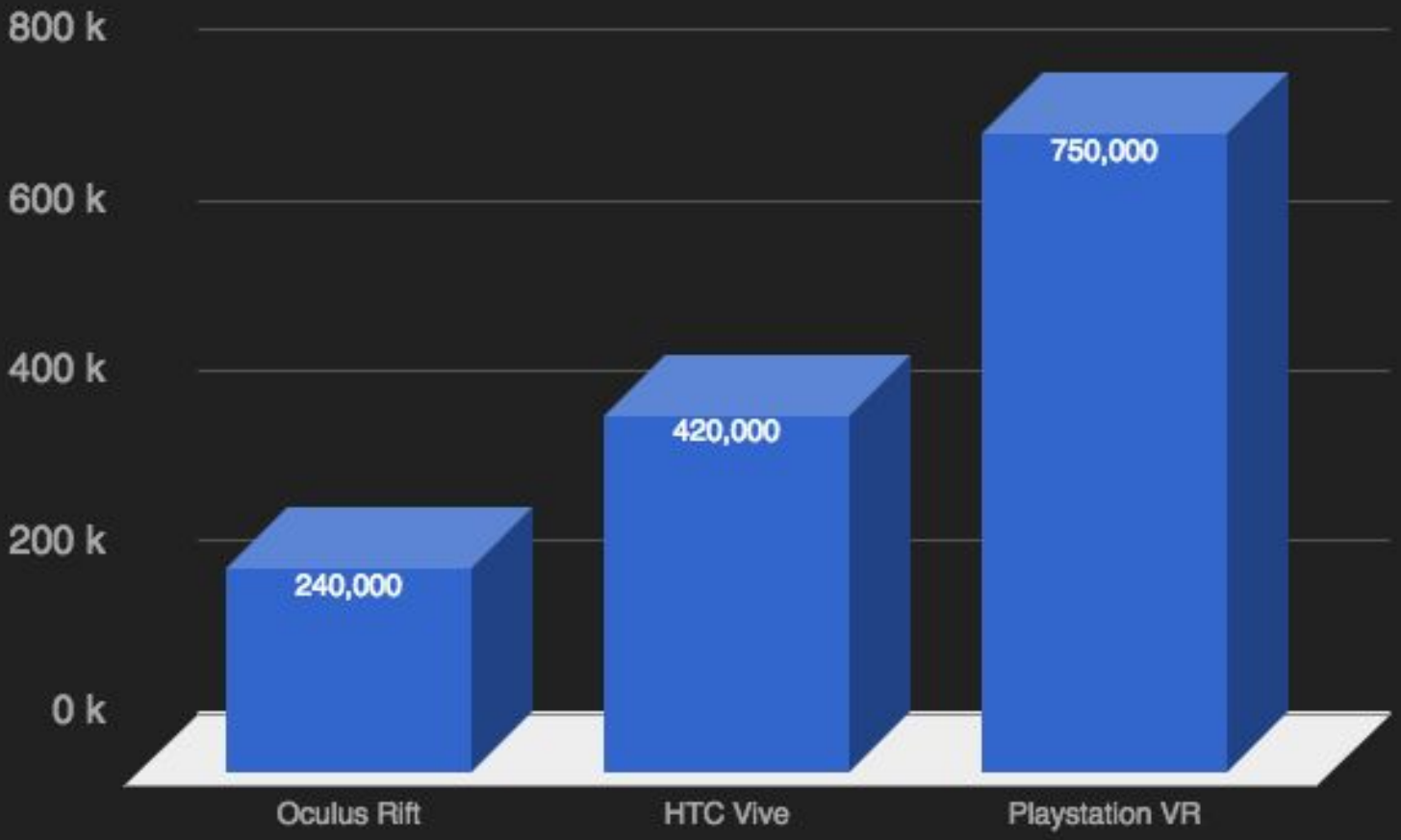
@tryvertical

***immersive media** is…*

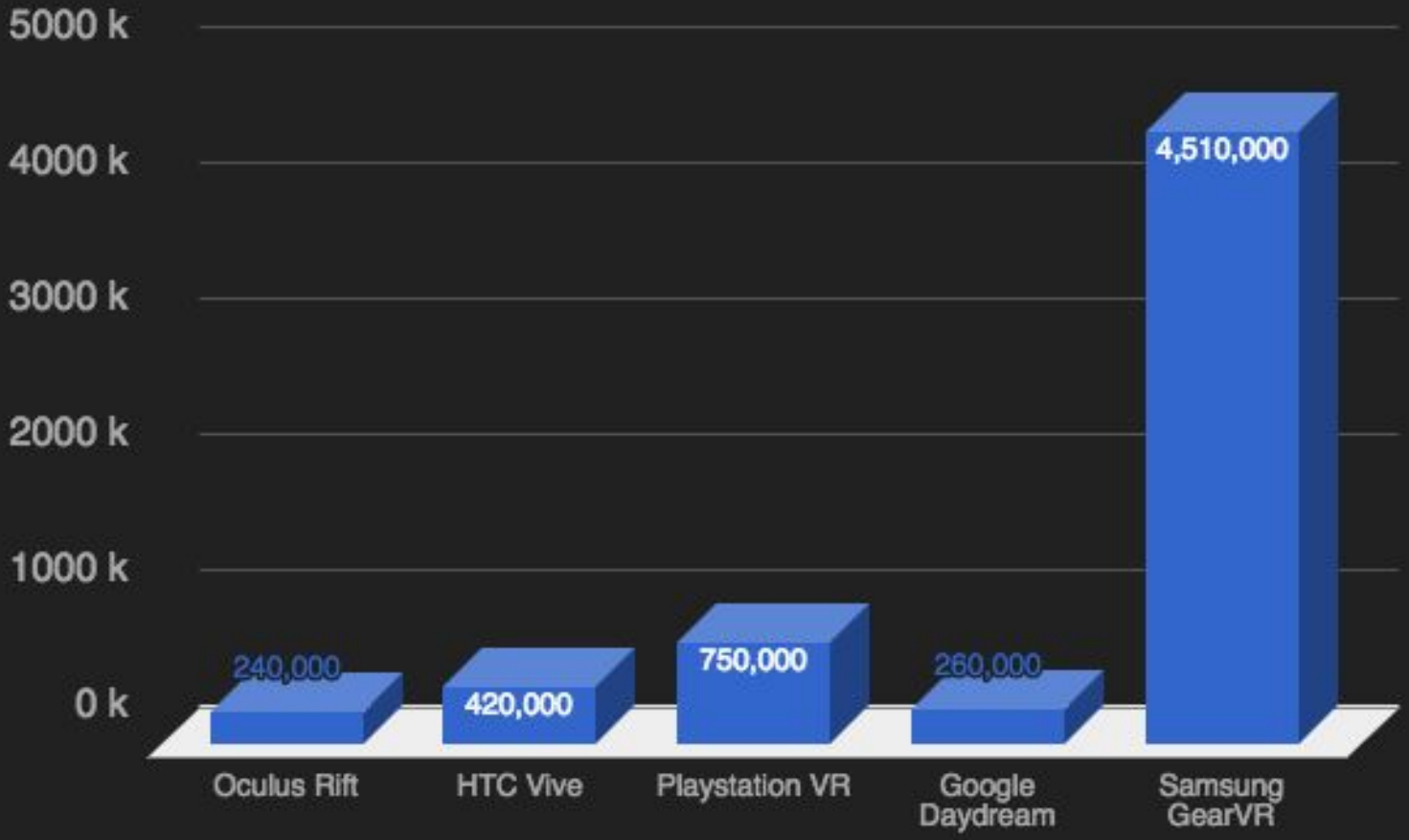
~~(1) a revolution in human computer interaction~~

(2) a massive market thanks to existing devices

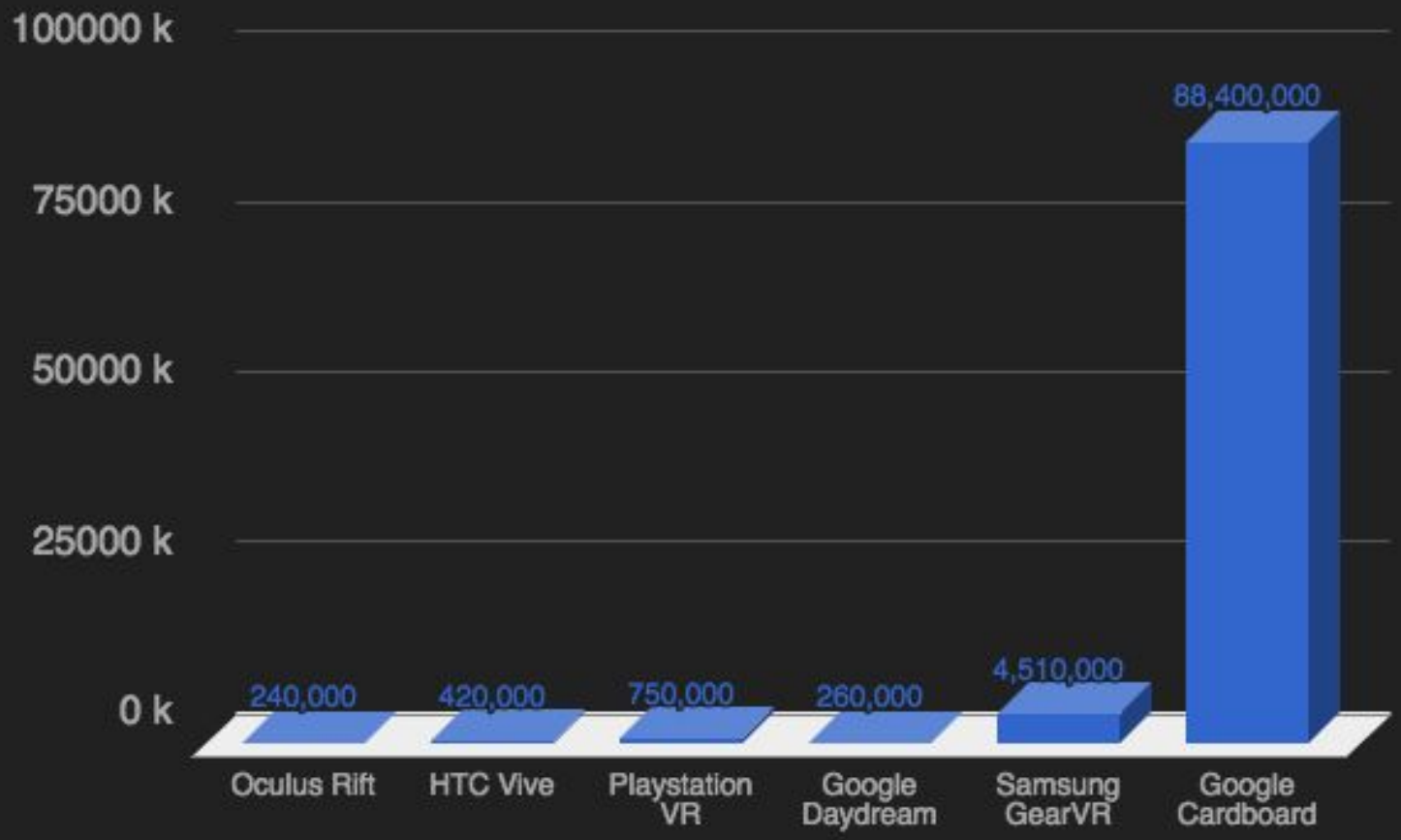
1.41 million


800 k
600 k
400 k
200 k
0 k
240,000
420,000
750,000
Oculus Rift
HTC Vive
Playstation VR

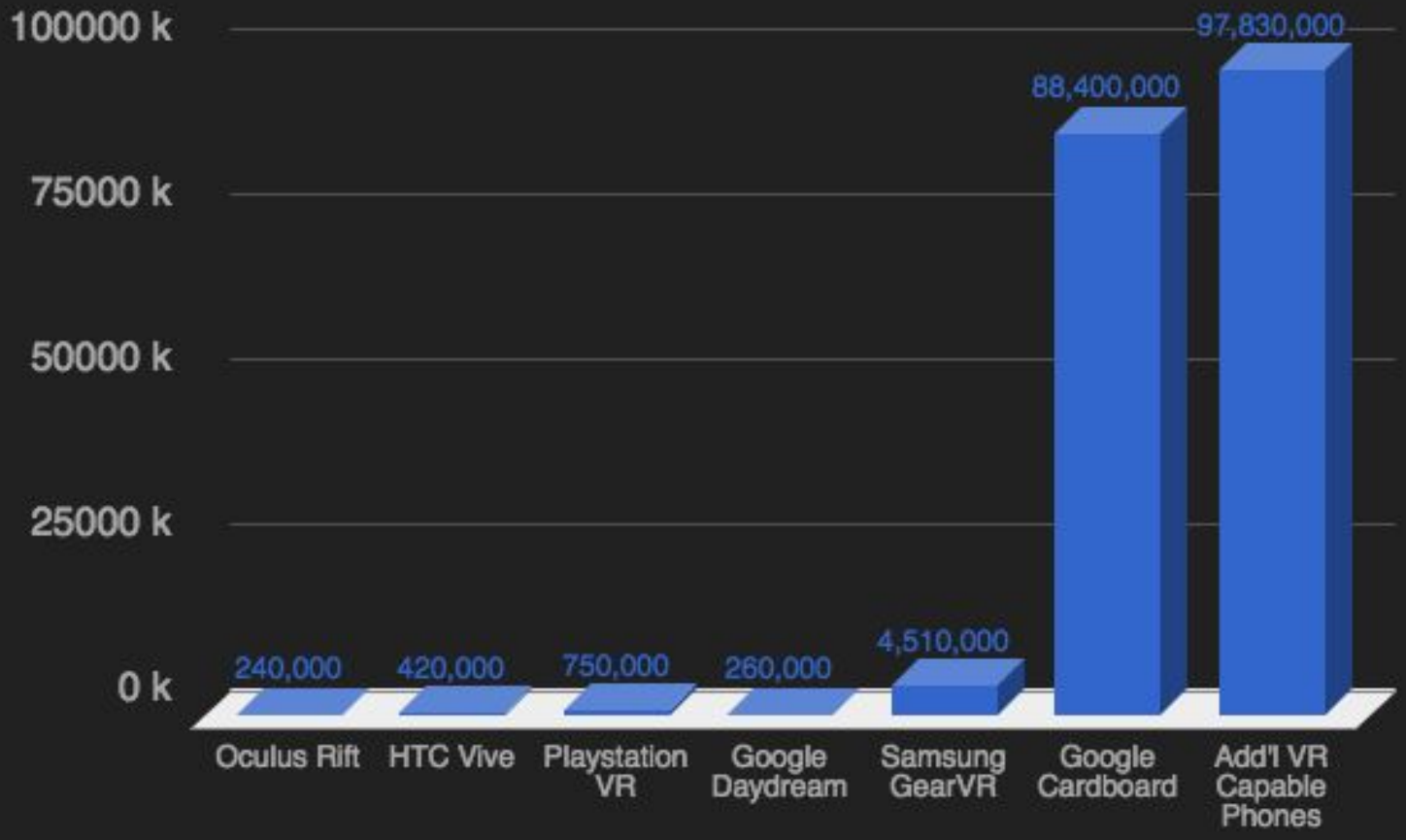
6.1 million


5000 k
4000 k
3000 k
2000 k
1000 k
0 k
240,000
420,000
750,000
260,000
4,510,000
Oculus Rift
HTC Vive
Playstation VR
Google Daydream
Samsung GearVR

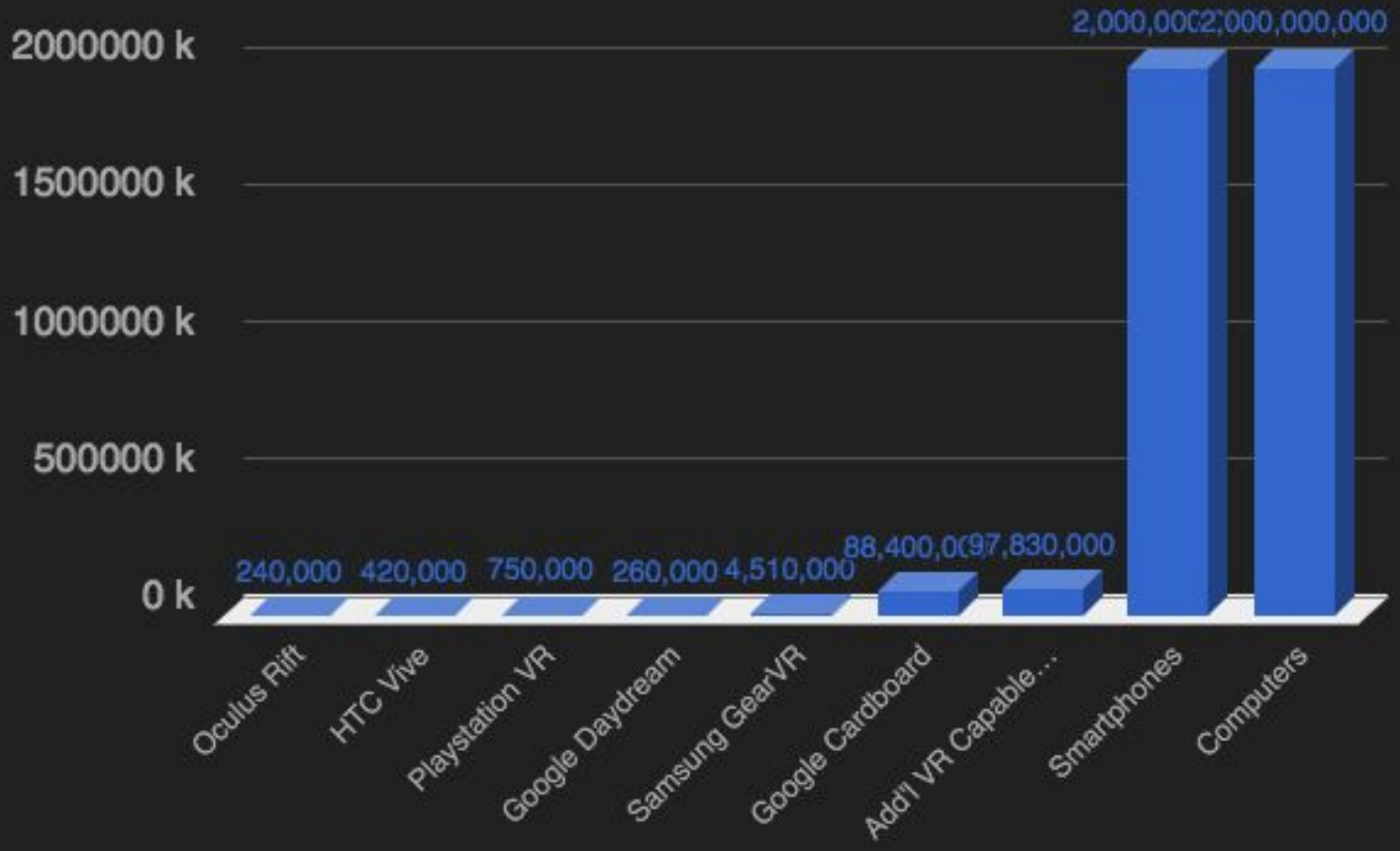
94.5 million


100000 k
75000 k
50000 k
25000 k
0 k
240,000
420,000
750,000
260,000
4,510,000
88,400,000
Oculus Rift
HTC Vive
Playstation VR
Google Daydream
Samsung GearVR
Google Cardboard

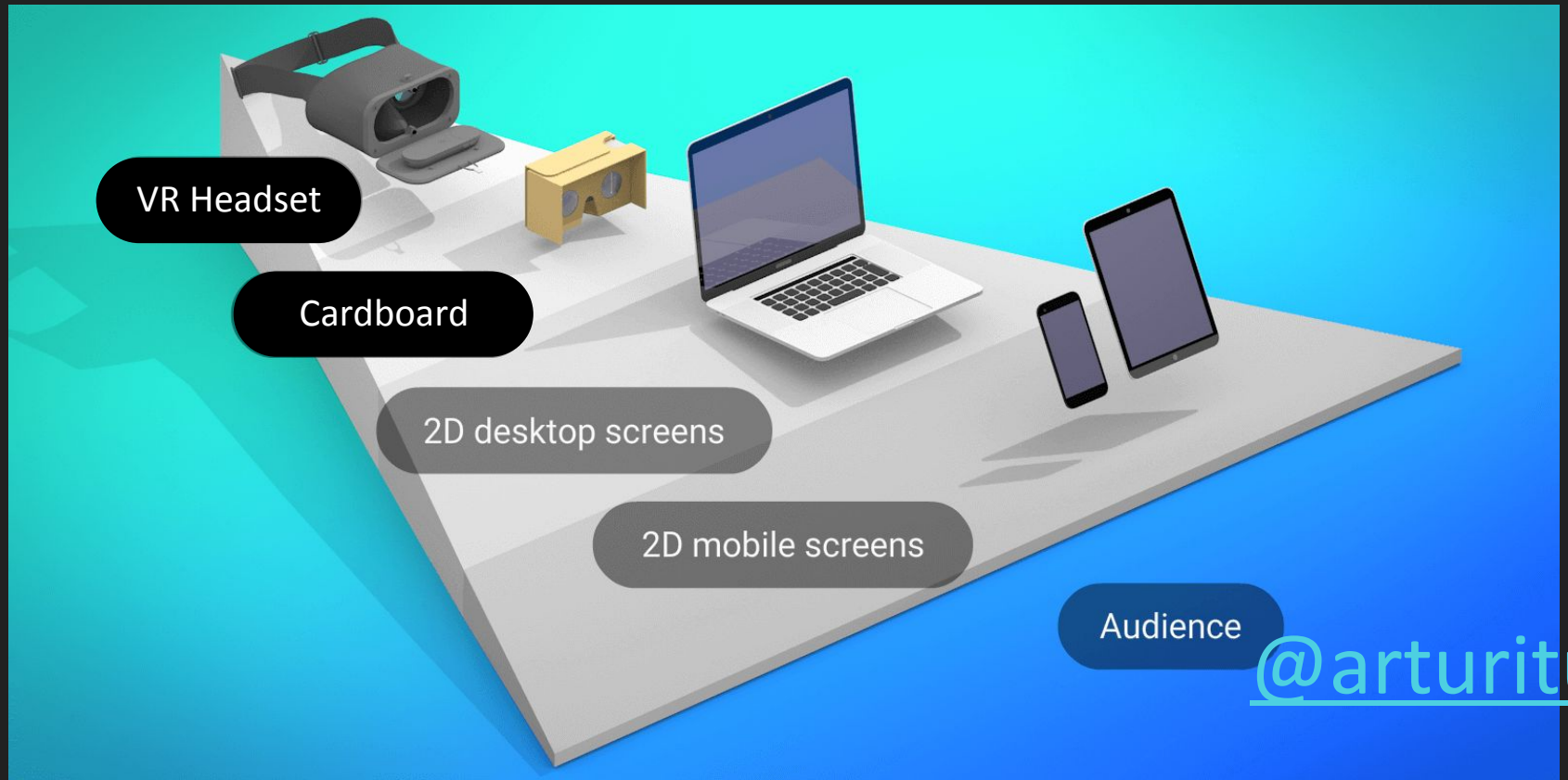
192.4 million



4.2 billion


2000000 k
1500000 k
1000000 k
500000 k
0 k
240,000
420,000
750,000
260,000
4,510,000
88,400,000
97,830,000
2,000,000
2,000,000,000
Oculus Rift
HTC Vive
Playstation VR
Google Daydream
Samsung GearVR
Google Cardboard
Add'l VR Capable…
Smartphones
Computers

immersive media is a continuum



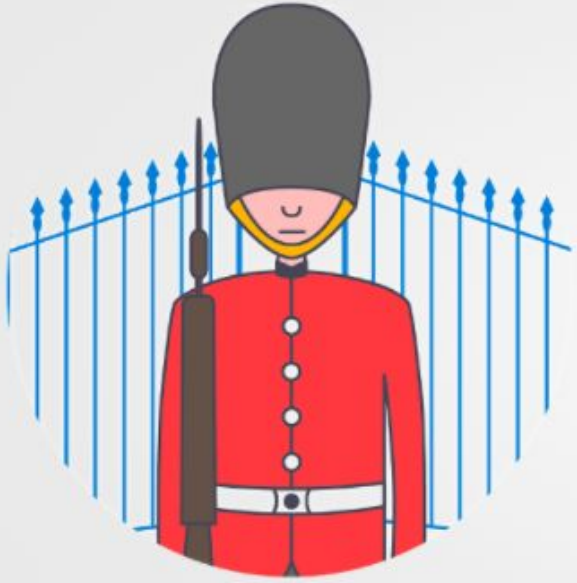
***immersive media** is…*

~~(1) a revolution in human computer interaction~~

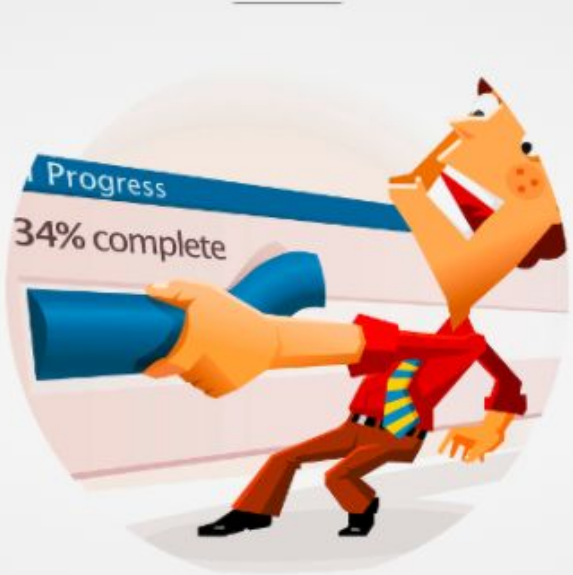
~~(2) a massive market thanks to existing devices~~

(3) best delivered via the web

mainstream vr experience is broken



Gatekeepers



Installs

Closed

@hyper_text

content must ***pull*** user into immersion

Hikers Quarterly
Signal Hill

immersive media is better on the web...

~~(1) content-first progressive enhancement~~

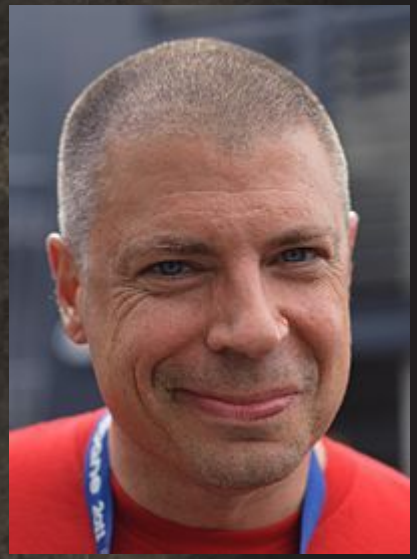
~~(2) no app store~~

(3) simpler development

(4) use the best of the web ecosystem

important moments in 3D & VR on the web

VRML
1994

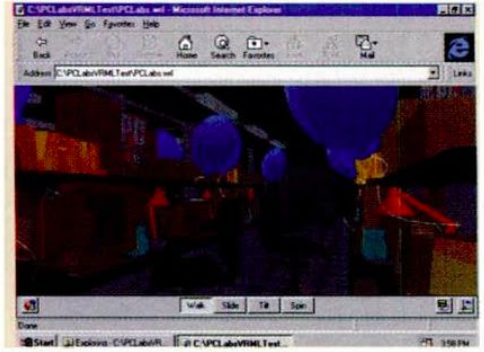


Mark Pesce
@mpesce

Tony Parisi
@auradeluxe

handling of color, lighting, and objects in our standard PC Magazine Labs world.

Live3D: Just repeat the words *outstanding performance* and never mind the product's less-than-ideal rendering of the world.



Internet Explorer has no sense of luminosity. The product textures well, but where shading should be smooth, it is coarse.

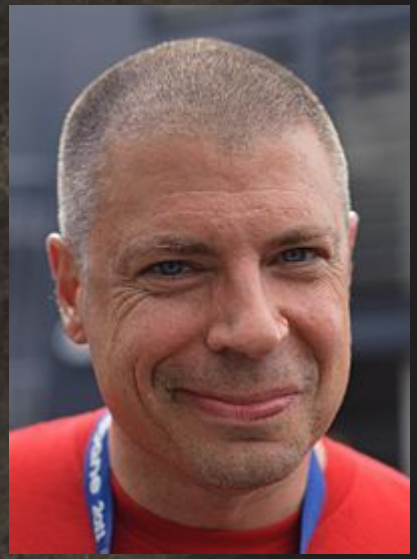
3Space Explorer gives you the pink spotlight from a desk lamp falling on paper but fails to load imported monitors files, leaving only the wireframe model.

WebSpace blends red floor with texture, makes the fluorescents emissive, and gives balloons their specular highlights. This is how VRML should look.

WIRL is visually closing in on OpenGL with Direct3D. With hardware acceleration, it performed the fastest of any browser in our informal tests.

WorldView: It is similar to Internet Explorer in shading but features a stronger sense of luminance; its lighting model support is incomplete.

VRML
1994 - ~2000



Mark Pesce
@mpesce

Tony Parisi
@auradeluxe

DARK TIMES
2000-2010

Web 3D Renaissance
2010-present

WebGL

Vladimir Vukicevic

@vvuk

Three.js

Ricardo Cabello

@mrdoob

WebVR 1.0

Kip Gilbert
@kearwoodgilbert

Brandon Jones
@tojiro

WebVR 1.0

1. Detect VR devices
2. Query capabilities
3. Poll position and orientation
4. Display imagery at appropriate framerate

WebVR Mozilla

Josh Carpenter
@joshcarpenter

C. Van Wiemeersch
@cvanw

Casey Yee
@whoyee

Diego Marcos
@dmarcos

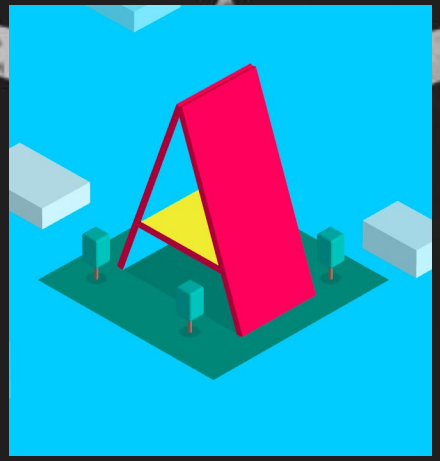
The Polar Sea
360° VR Documentary
Filmmaking in the
Northwest Passage
Presented in WebGL

making VR/3D (on the web) was hard

how many lines of code for a basic scene?

WebGL: 400

Three.js: 40



Josh Carpenter
@joshcarpenter

Kevin Ngo
@andgokevin

Don McCurdy
@donrmccurdy

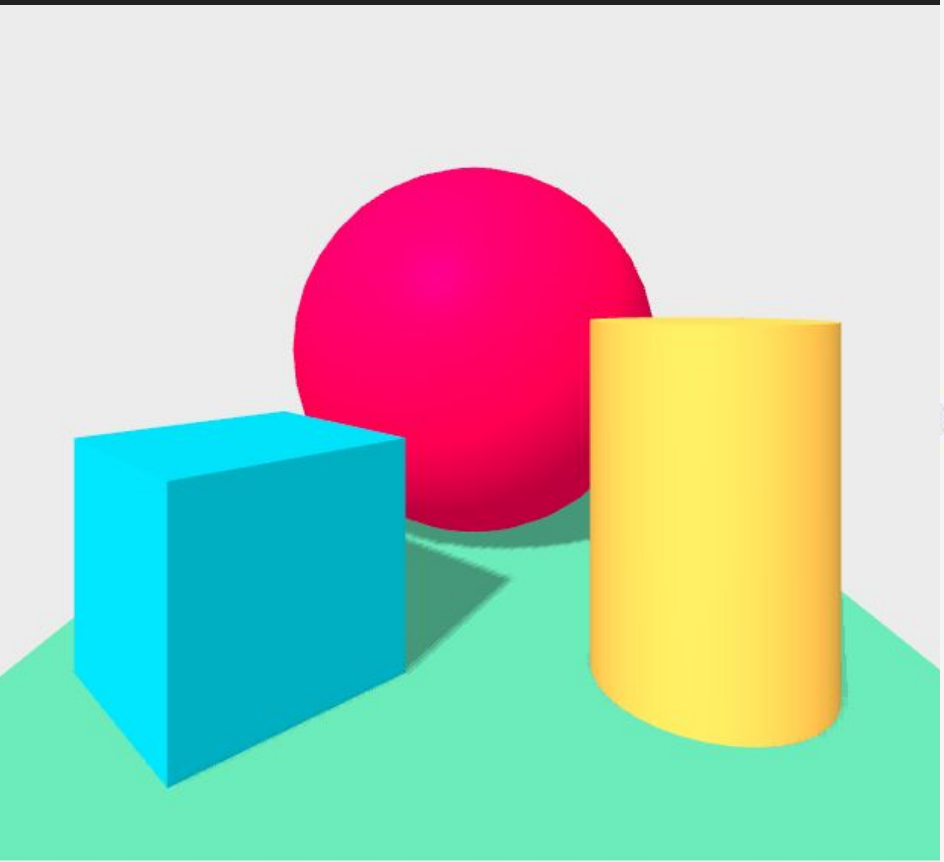
Diego Marcos
@dmarcos

how many lines of code for a basic scene?

WebGL: 400

Three.js: 40

A-Frame: 4



```
<!DOCTYPE html>
<html>
  <head>
    <title>Hello, WebVR! - A-Frame</title>
    <meta name="description" content="Hello, WebVR! - A-Frame">
    <script src="https://aframe.io/releases/0.7.0/aframe.min.js
  </head>
  <body>
    <a-scene>
      <a-box position="-1 0.5 -3" rotation="0 45 0" color="#4CC
      <a-sphere position="0 1.25 -5" radius="1.25" color="#EF2D
      <a-cylinder position="1 0.75 -3" radius="0.5" height="1.5
      <a-plane position="0 0 -4" rotation="-90 0 0" width="4" h
      <a-sky color="#ECECEC"></a-sky>
    </a-scene>
  </body>
</html>
```

A-Frame

@rolanddubois

- a 3DML (3D markup language) like X3Dom and GLAM
- DOM-based Entity-Component System => declarative & extensible (similar to Unity/UE4/PlayCanvas)

The A-Frame Stack:

Works With Everything

d3.js *Vue.js* *React* *Redux* *jQuery* *Angular*

More than just A-Frame:

- ReactVR by Facebook
- ForgeJS by GoPro
- Primrose
- Janus VR
- Babylon.js
- GLAM (GL And Markup)
- PlayCanvas

immersive media is better on the web...

~~(1) content-first progressive enhancement~~

~~(2) no app store~~

~~(3) simpler development~~

(4) use the best of the web ecosystem

https://webvr.rocks

Firefox Nightly

Microsoft Edge

Chromium

Chrome for Android

Oculus Carmel

Samsung Internet

Mobile Polyfill

A-Frame JSNES

0.41

LJ65

pause | restart | disable sound | zoom in

Running: 56.11 FPS

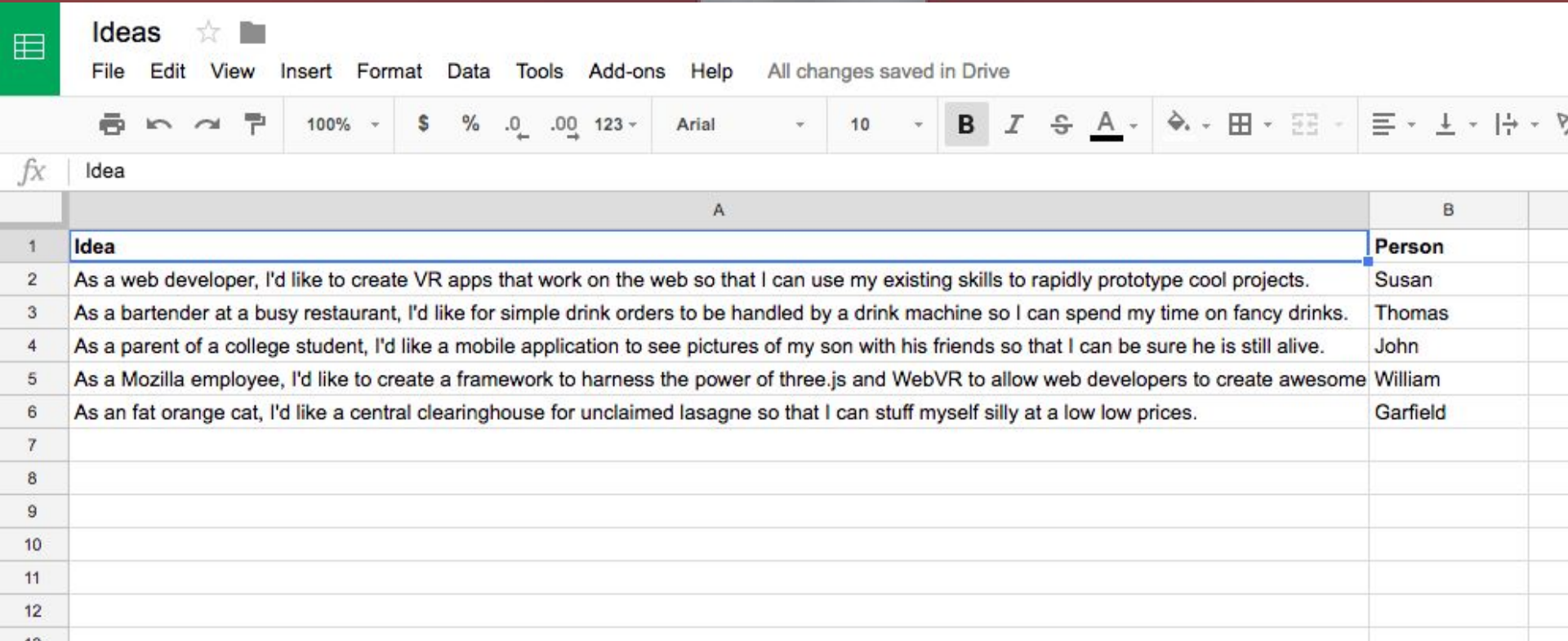
Controls

Button	Player 1	Player 2
Left	Left	Num-4
Right	Right	Num-6
Up	Up	Num-8
Down	Down	Num-2
A	X	Num-7
B	Z/Y	Num-9
Start	Enter	Num-1
Select	Ctrl	Num-3

WebVR + JSNES

https://kfarr.github.io/aframe-jsnes/

WebVR + Google Sheets
https://github.com/kfarr/aframe-notecards



Ideas

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

100% $ % .0 .00 123 Arial 10 B I S A

fx Idea

	A	B
1	**Idea**	**Person**
2	As a web developer, I'd like to create VR apps that work on the web so that I can use my existing skills to rapidly prototype cool projects.	Susan
3	As a bartender at a busy restaurant, I'd like for simple drink orders to be handled by a drink machine so I can spend my time on fancy drinks.	Thomas
4	As a parent of a college student, I'd like a mobile application to see pictures of my son with his friends so that I can be sure he is still alive.	John
5	As a Mozilla employee, I'd like to create a framework to harness the power of three.js and WebVR to allow web developers to create awesome	William
6	As an fat orange cat, I'd like a central clearinghouse for unclaimed lasagne so that I can stuff myself silly at a low low prices.	Garfield
7		
8		
9		
10		
11		
12		

WebVR + Google Sheets
https://github.com/kfarr/aframe-notecards

Back to Scene
3dio
Search...
<a-scene>
<a-entity />
<a-entity />
WebVR + Cross Linked Objects
@TomasPolach

WebVR + Links

[@aframevr]

components
@aframevr

aframe-alongpath-component

protyze

September 30th 2016 · © GPL-3.0 · ★ 8

A-Frame Component that allows entities to follow predefined paths

aframe-alongpath-component.min.js · on GitHub

aframe-animation-component

Kevin Ngo

June 1st 2016 · © MIT · ★ 193

Animations in A-Frame using anime.js

aframe-animation-component.min.js · on GitHub

aframe-auto-detect-controllers-component

Michael Chen

December 27th 2016 · © MIT · ★ 5

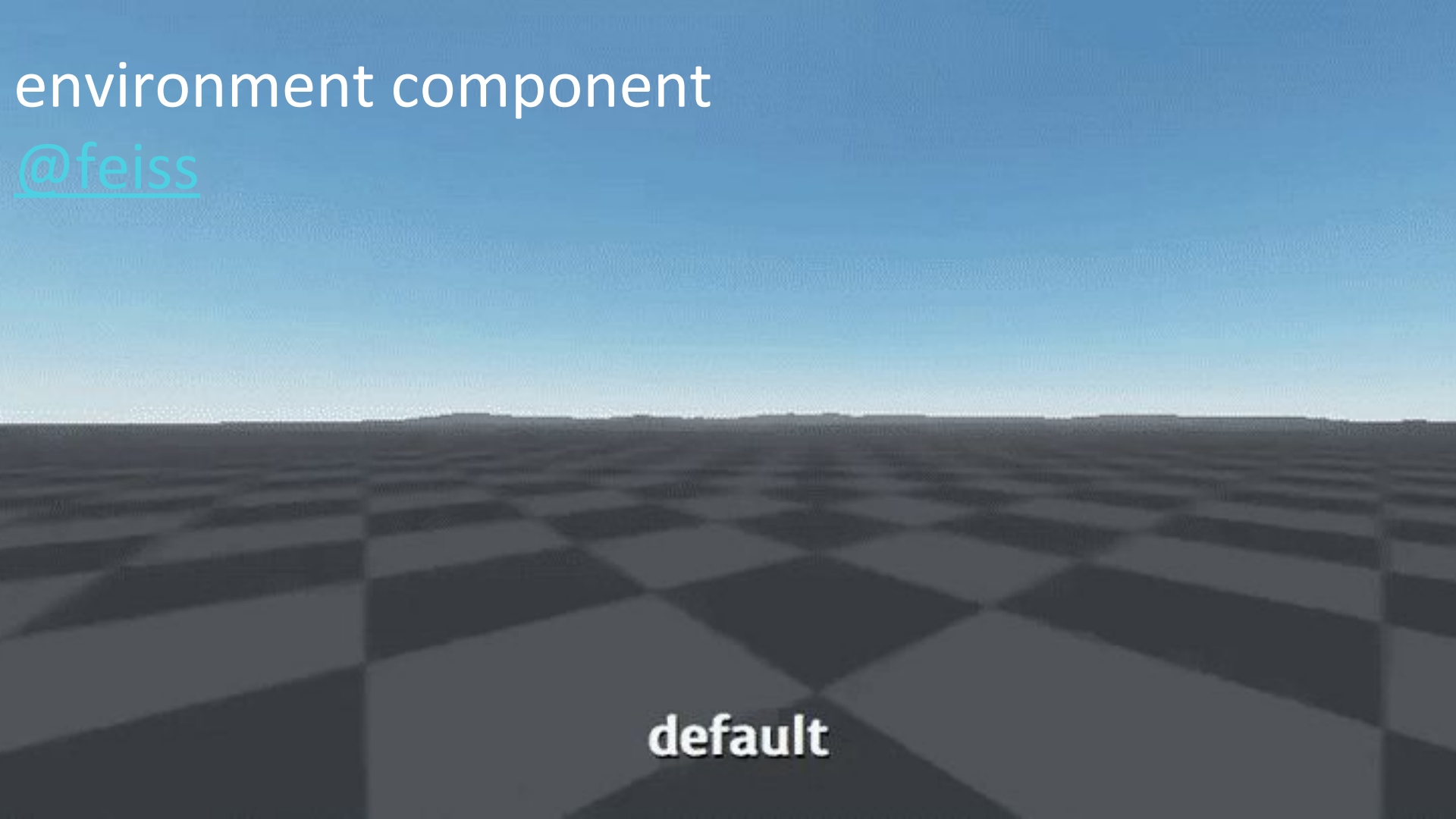
Auto-Detect Controllers component for A-Frame.

aframe-auto-detect-controllers-component.min.js · on GitHub

aframe-crawling-cursor

Jun Ito (https://twitter.com/jujunjun110)

December 9th 2016 · © MIT · ★ 12


environment component
@feiss
default

superhands component
@datatitian

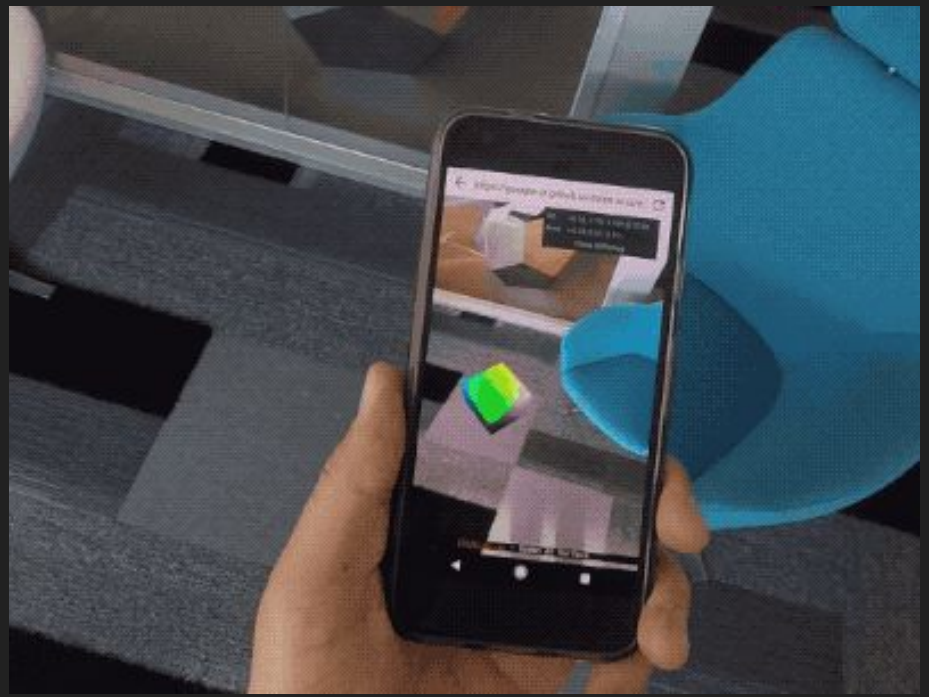
super-hands

ar.js marker AR

@jerome_etienne

```
https://github.com/jeromeetienne/ar.js -->
<script src="https://aframe.io/releases/0.5.0/aframe.min.js">
</script>
<script
src="https://rawgit.com/jeromeetienne/ar.js/master/aframe/build/afra
me-ar.js"></script>
<script>THREEx.ArToolkitContext.baseURL =
'https://rawgit.com/jeromeetienne/ar.js/master/three.js/'</script>
<body style='margin : 0px; overflow: hidden;'>
    <a-scene embedded artoolkit='sourceType: webcam;'>
        <a-box position='0 0.5 0' material='opacity: 0.5;'></a-box>
        <a-marker-camera preset='hiro'></a-marker-camera>
    </a-scene>
</body>
```

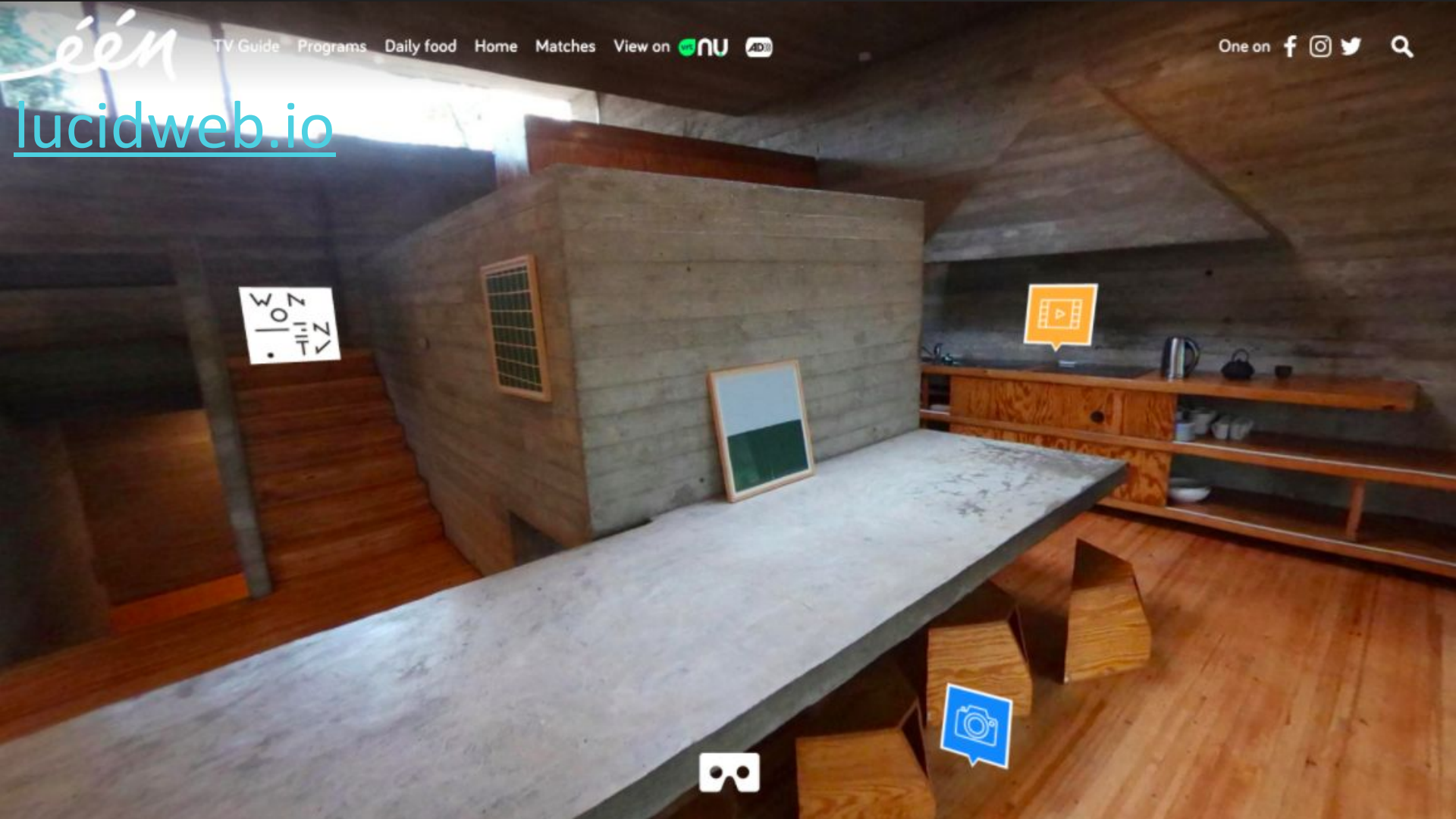
https://github.com/google-ar/



Escape Room
No JavaScript!
@datatitian

how to use this in real life?

@V_Kurbatov

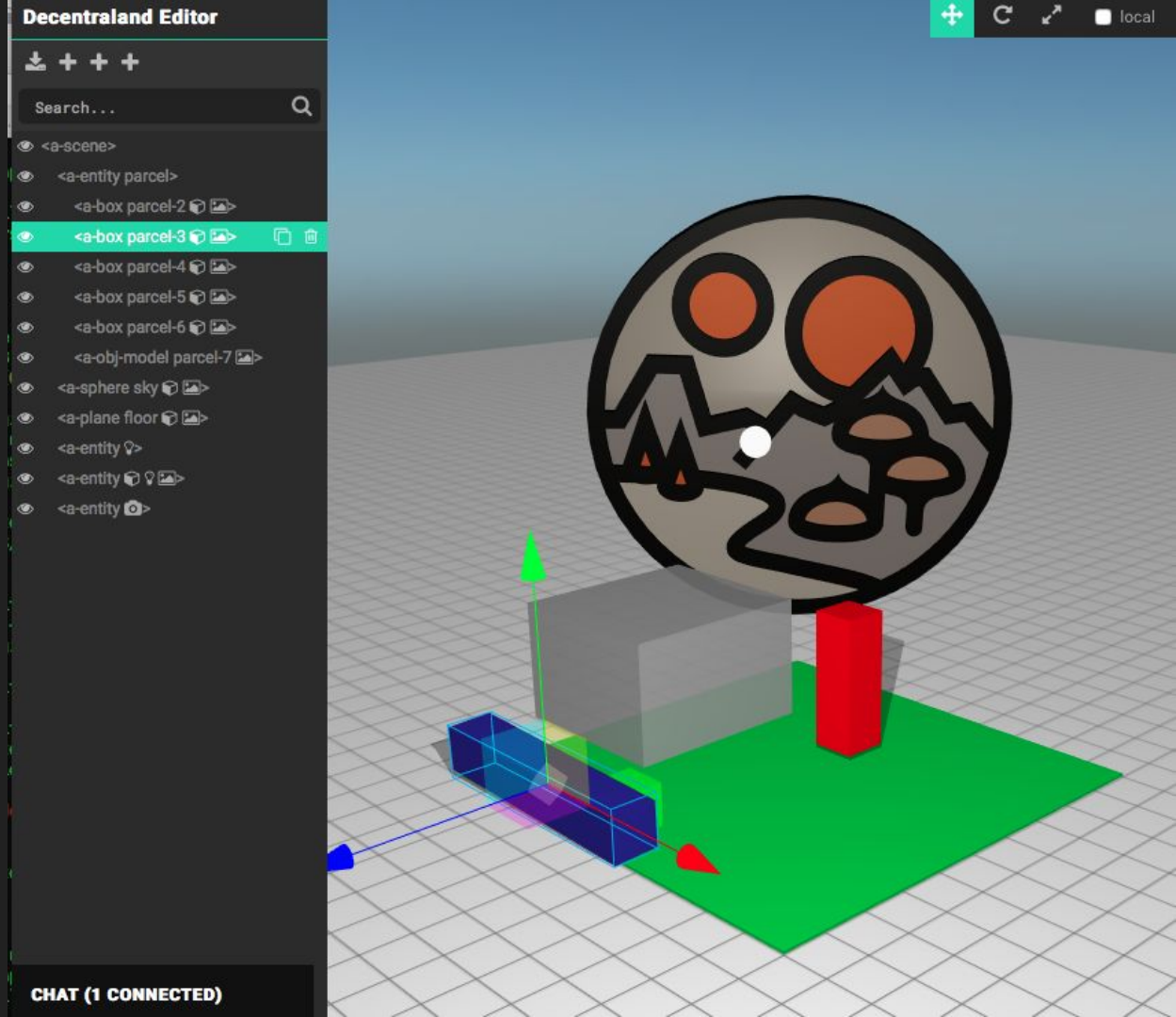

TV Guide
Programs
Daily food
Home
Matches
View on
One on
lucidweb.io

Matterport
July 28 at 9:43am ·

Don't miss this beautiful Silicon Valley 5BR/3.5BA home, complete with bright sunny kitchen, living room, and formal dining room. View the 3D tour right here on Facebook!

Like Comment Share

@decentraland

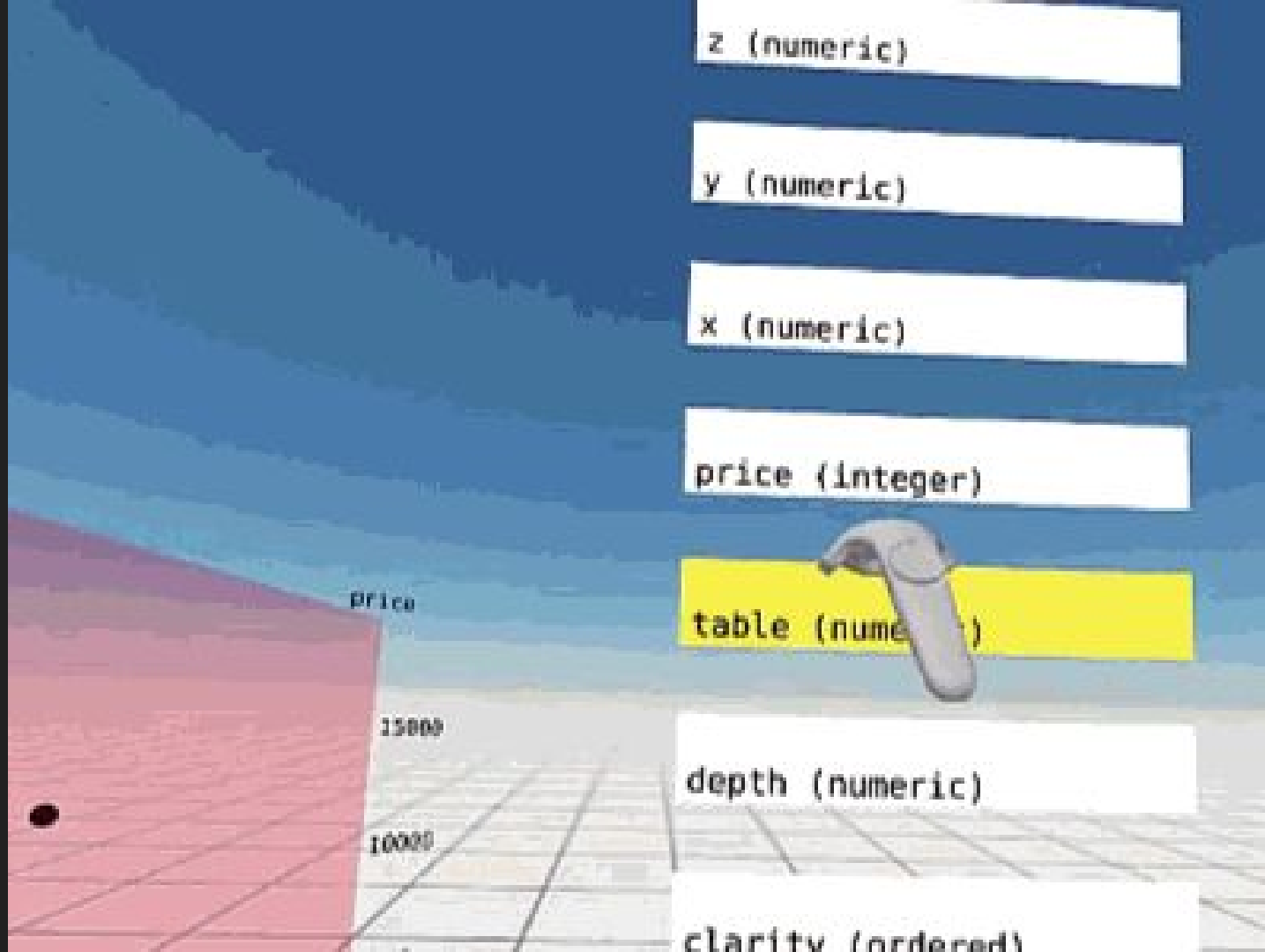


“There’s no barrel bombs. We don’t have barrels.”

Bashar al-Assad, President of Syria

Mathworld VR @michaltakac

Mr. Kieran Farr
aframe.io
What is a web page?
Tech Issues
A-FRAME
A-FRAME



Adit
@datatitian

@mozillavr a-painter

The future of immersive web experiences

#ChromeDevSummit

***immersive media** is…*

(1) a revolution in human computer interaction

(2) a massive market thanks to existing devices

(3) best delivered via the web

***immersive media** is…*

ready for you to use today!

aframe.io